

REDESCRIPTION OF *NOTOEDICEROS TASMANIENSIS*
BOUSFIELD AND A NOTE ON THE SYNONYMY OF
WARREYUS BARNARD & DRUMMOND WITH
EXOEDICEROIDES BOUSFIELD
(CRUSTACEA: AMPHIPODA: EXOEDICEROTIDAE)

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ABSTRACT: *Notoediceros tasmaniensis* Bousfield 1983 was described incorrectly, and a full new description is presented. The genus *Exoediceroides* Bousfield 1983 (March) must supersede *Warreyus* Barnard & Drummond 1983 (June). A new key is provided to the eight genera (including the two new ones) now comprising the Exoedicerotidae Barnard & Drummond 1982.

Certain features of *Notoediceros tasmaniensis* Bousfield 1983 were incorrectly described by that author, notably the significant third uropod. The illustrations of this appendage are, owing to their extremely small size, uninterpretable, but uropod 3 is described as being 'unequally biramous'—a condition judged by Bousfield to constitute one of three major distinguishing characters in the separation of *Notoediceros* from closely related genera. Uropod 3 is, in fact, uniramous.

Our description of this genus was ready for press when it was pre-empted by Bousfield's paper; but we present our full description to correct and elaborate the brief original.

Bousfield (1983) also pre-empted *Warreyus* Barnard & Drummond 1983 with *Exoediceroides*. The very small size of the figures and scant description of the type species are quite inadequate, however, to permit distinction to be made between the two known species of this genus, both described previously: *Oediceros latrans* Haswell 1879; and *Exoediceros maculosus* Sheard 1936 (see Barnard & Drummond 1983).

Our examination of the carcass of the holotype (deposited recently in the Museum of Victoria) indicates that *Exoediceroides maximus* Bousfield 1983 is a synonym of *Oediceros latrans* Haswell.

LEGENDS

Capital letters describe morphological parts; lower case letters to the left of capital letters denote specimens cited in figure captions; lower case letters to the right of capital letters or in the body of any drawing are cited in the following list: A, antenna; B, body; C, coxa; D, dactyl; F, accessory flagellum; G, gnathopod; H, head; I, inner plate or ramus; J, pleopod; L, labium; M, mandible; O, outer plate or ramus; P, pereopod; Q, cuticle; R, uropod; S, maxilliped; T, telson; U, prebuccal anterior; W, pleon; X, maxilla; Y, gill; Z, brood plate (oostegite); d, dorsal; e, enlargement of edge; o, opposite; r, right; s, setae removed.

SYSTEMATICS

Family EXOEDICEROTIDAE

DIAGNOSIS: Amphipoda like Oedicerotidae but apices of rami on uropods 1-2 spinose and eyes, when present, paired.

VALID GENERA WITH TYPE SPECIES: *Exoediceros* Stebbing 1899 (*Oediceros fossor* Stimpson 1856) (= *Oediceros arenicola* Haswell 1879), *Bathyporeiapus* Schellenberg 1931 (*B. magellanicus* Schellenberg 1931), *Exoediceropsis* Schellenberg 1931 (*E. chiltoni* Schellenberg 1931), *Metoediceros* Schellenberg 1931 (*M. fuegiensis* Schellenberg 1931), *Parhalimedes* Chevreux 1906 (*P. turqueti* Chevreux 1906), *Patuki* Cooper & Fincham 1974 (*P. breviuropodus* Cooper & Fincham 1974), *Exoediceroides* Bousfield 1983 (*E. maximus* Bousfield 1983 = *Oediceros latrans* Haswell 1879), *Notoediceros* Bousfield 1983 (*N. tasmaniensis* Bousfield 1983).

OTHER SPECIES: *Bathyporeiapus bisetosus* Escofet 1970, *B. ruffoi* Escofet 1971, *Parhalimedes tropicalis* Barnard 1961, *Exoediceroides maculosus* (Sheard 1936), *Patuki roperi* Fenwick 1983.

KEY 1 TO THE GENERA

1. Uropod 3 composed of peduncle only *Metoediceros*
Uropod 3 with 1-2 rami 2
2. Uropod 3 with 1 ramus *Notoediceros*
Uropod 3 with 2 rami 3
3. Gnathopods well developed 4
Gnathopods mittenform or inferior 6
4. Epimera 1-3 with many marginal setae *Patuki*
All setae, if present, on epimera 1-3 facial, not marginal 5
5. Gill of coxa 5 small or vestigial, primary flagellum of antenna 1 with diverse armament, male and female gnathopods diverse *Exoediceros*
Gill 5 ordinary, armament of primary flagellum on antenna 1 homogeneous, gnathopods of both sexes alike *Exoediceroides*
6. Molar feeble *Exoediceropsis*
Molar strong 7
7. Inner plate of maxilla 1 naked, maxilla 2 lacking facial or submarginal inner row of setae, dactyls of pereopods 3-6 vestigial *Bathyporeiapus*

Inner plate of maxilla 2 widely setose, maxilla 2 with submarginal facial inner setal row, dactyls of pereopods 3-6 ordinary *Parhalimедon*

KEY 2 TO THE GENERA

1. Male gnathopods with spine fields on hands near apices of dactyls 2
 - Male gnathopods lacking propodal spine fields 3
- 2a. Uropod 3 with 2 rami *Exoediceros*
 - b. Uropod 3 with 1 ramus *Notoediceros*
 - c. Uropod 3 lacking rami *Metoediceros*
3. Gnathopods ordinary, large 4
 - Gnathopods mittenform or gnathopod 2 almost simple couplet 6 of Key 1
4. Epimera 1-3 with many marginal setae *Patuki*
 - All setae of epimera 1-3, if present, facial
 - *Exoediceroides*

Genus *Notoediceros* Bousfield 1983

1983 *Notoediceros* Bousfield, p. 274.

TYPE SPECIES: *Notoediceros tasmaniensis* Bousfield 1983.

DIAGNOSIS: Body not carinate. Eyes paired, separate. Article 3 of peduncle on antenna 1 half as long as or shorter than half length of article 1. Fully articulate, scale-like accessory flagellum present. Primary flagellum of antenna 1 composed of similar articles bearing similar armaments. No articles of antenna 2 especially swollen. Calceoli absent. Mandibular incisor projecting, toothed; molar large, tritulative; palp 3-articulate, article 2 straight, article 3 clavate, stubby. Inner lobes of lower lip distinct, separate, fleshy. Outer plate of maxilla 2 with thin, slightly submarginal distinct spine, but lacking a single thick spine distinct from others. Plates of maxilla 2 slightly diverse. Anterior coxae strongly setose, coxae 1-4 rounded below, coxa 4 with posteroventral lobe. Gnathopods sexually diverse, in each sex similar to each other, subchelate; wrists not weakly lobate, not guarding hands; palms oblique, well defined, hands in female with sparse spines near apex of closed dactyl but in male with weakly developed spine fields. Dactyl of pereopods 3-4 obsolescent. Coxal gill 5 large. Article 2 of pereopod 7 expanded but scarcely lobate. Uropod 2 not reaching far along uropod 1; uropod 3 uniramous, peduncle not elongate, armed with large marginal spines; single ramus short. Telson entire, thick and fleshy but articulate.

RELATIONSHIP: *Notoediceros* appears to have ancestors similar to *Exoediceros* with which it shares numerous characters: most mouthparts, generalities of antennae, gnathopods, pereopodal dactyls, pleopods, uropods 1-2; and of course, familial characters. *Notoediceros* differs from *Exoediceros* in the loss of calceoli and aesthetascs on the antennae, the strongly bent bases of major spines and the reduction of 3 other spines on the outer plate of maxilla 1, the loss of lobe extensions on the wrists (carpi) of the gnathopods, the large gill of coxa 5, the bilobate condition of all the gills, and the loss of the inner ramus of uropod 3. These same distinc-

tions are generally applicable to *Exoediceroides* which is distinguished from *Exoediceros* in the keys above.

Metoediceros, which is closely related, differs from *Notoediceros* in the reduction of uropod 3 to a small vestige, the lack of an accessory flagellum, the lack of a mandibular palp and the poorly setose inner plate of maxilla 1.

Exoediceropsis differs from *Notoediceros* in the feeble molar, the feeble, mitten-shaped gnathopods, the marginal setae of epimera, the unsetose inner plate of maxilla 1, and the small outer plate of the maxilliped.

Bathyporeiapus differs from *Notoediceros* in all except the last of the features just cited. *Parhalimедon* differs from *Notoediceros* in its feeble molar, its feeble mitten-shaped gnathopods, the long uropod 3 with long peduncle, the presence of 2 rami on uropod 3, and the absence of eyes.

The male of *Patuki* is unknown, but the third uropod of the female bears 2 rami and has an unarmed peduncle; and the eyes are closer together dorsally than those of *Notoediceros*.

Notoediceros tasmaniensis Bousfield 1983

Figs. 1-4

1983 *Notoediceros tasmaniensis* Bousfield, 275, fig. 2 (part).

DESCRIPTION OF MALE 'p': Each eye moderately pigmented. Ommatidia clear apically. Lateral cephalic lobes small, mammilliform, subacute.

Antennae short, extending subequally, articles of flagella short, bead-like, proliferate, lacking calceoli and aesthetascs; flagellum of antenna 1 with 12 articles, of antenna 2 with 10 articles, in both cases apicalmost article tiny.

Epistome flat in front; upper lip poorly separated from epistome, in lateral view protruding in front, rounded or subtruncate below, with dense anterior stiff brush. Incisors toothed; right lacinia mobilis 3-pronged, prongs serrate; left lacinia mobilis with 3 teeth; rakers stout, right and left about 8 each; molar stout, cuboid but strongly tritulative; palp stout, article 1 short, article 2 expanded and strongly setose, article 3 clavate, setae = ABCDE. Inner plate of maxilla 1 fully setose medially, outer plate with 11 spines (not all shown on all illustrations), several spines basally bent, 3 spines very small; palp strongly setose, 2-articulate. Plates of maxilla 2 slightly diverse, broad, inner with full oblique facial row of setae. Inner plates of maxilliped with medial margins appressed and bent orally, setose, apices each with 3 small medial spines and numerous widely spread setae; outer plates longer than inner, medially spinose; dactyl unguiform, with several setules on inner margin.

Coxae 1-4 progressively less setose; some setae on coxae 1-3 especially stout and often in ranks or submarginal; coxa 1 strongly rounded below, apically expanded, densely setose; coxa 2 narrower than 1, 3 as broad as 1, both more weakly setose; coxa 4 very broad and more elongate than anterior coxae, with weak but

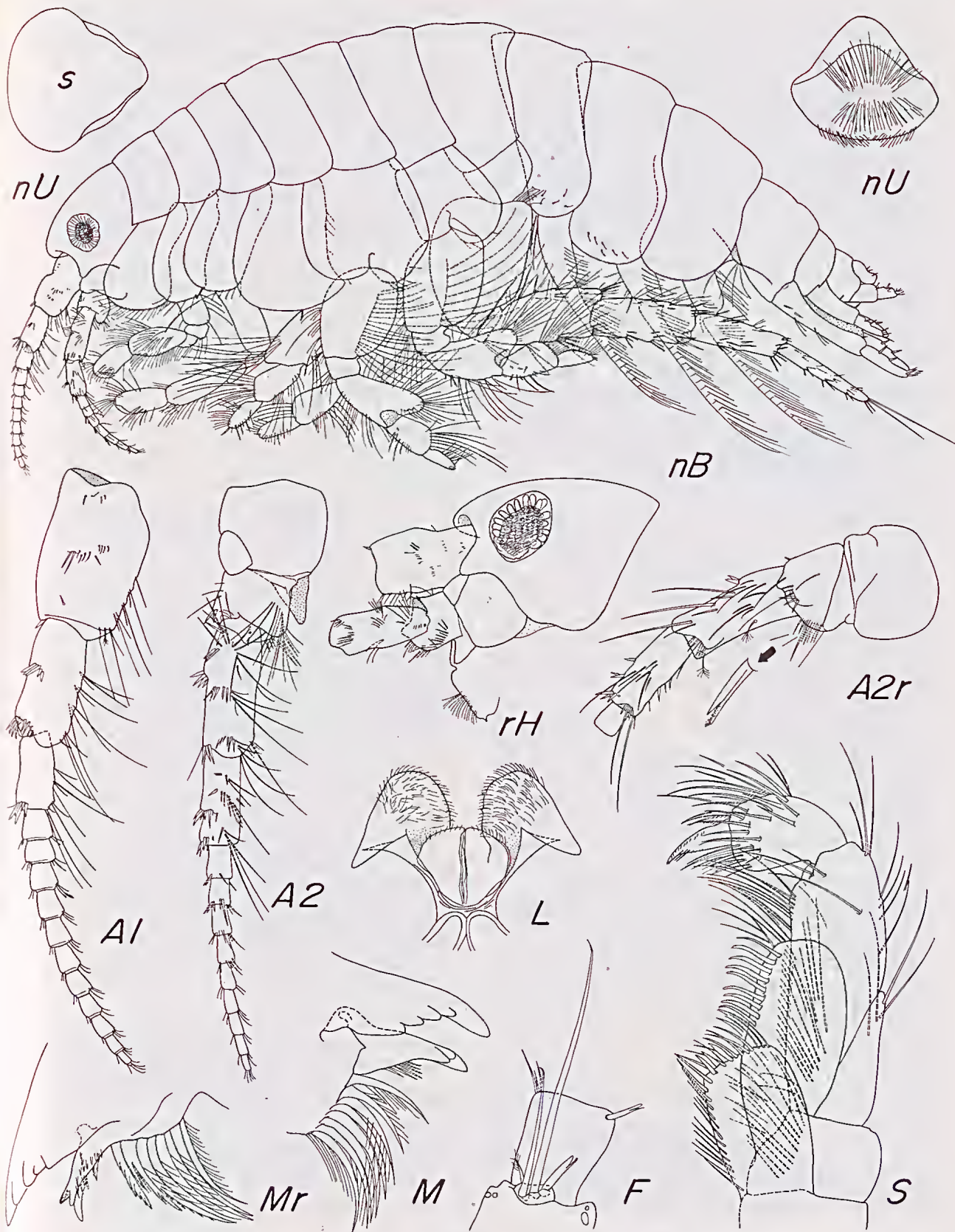


Fig. 1—*Notoediceros tasmaniensis*, unattributed figures, male 'p'; n, female 'n'; r, male 'r'.

pointed posteroventral lobe, poorly setose below; coxa 5 scarcely shorter than coxa 4, posterodorsal margin minutely castellate. Gnathopod 2 slightly larger than 1, both weakly twisted in preserved state, wrist of gnathopod 2 longer than that of gnathopod 1, both densely setose laterally, with strong axial row of setae medially, posterior lobes obsolescent, these margins armed with about 10 very stout, curved, pectinate spines; spine field of hand on gnathopod 2 about 14 count. (Article 2 of gnathopod 1 with 2 long posterior setae and 4 medial; of gnathopod 2 with 7 posterior, 1 posteroventral and 1 anteroproximal long setae.)

Dactyls of pereopods 3-4 vestigial, each bearing ordinary setule of normal dimensions, dwarfing dactyl; article 2 of pereopods 3-4 with strong anteromedial vertical row of long setae, both margins of article 6 spinose but anterior margin with multiple rows of spines. Pereopods 5-6 bearing small dactyls with largely absorbed apical nail and large setule; dactyl of pereopod 7 elongate, armed on both margins, apex with long and short spines; article 2 of pereopods 5-7 with midfacial lateral ridge, medial faces with many seriate ranks of filamentous setae in vertically oriented tiers. Gills present on coxae 2-6, flat, unpleated, bigeminous, with transverse capillaries.

Pleopods similar, peduncles elongate, each with 2 feeble retinacula, each outer ramus with posterior tooth or boss on article 1 apparently serving as clasp to lock with inner ramus; basal to each outer ramus, peduncle with small hook-like boss to hold ramus from apparent excessive backward motion; outer and inner rami about 1.5 and 1.3 times respectively as long as peduncles, outer and inner rami with about 20 and 16 articles respectively; each inner ramus with 4-5 basal clothespin setae (with apical pincer-fork).

Epimera 1-3 each with several anteroventral marginal setae; epimeron 1 with distinct facial ridge well above armaments, face below ridge with 9 stiff, wire-like setae and one similar seta apparently on medial surface; epimeron 2 lacking ridge, with 8 facial wire-like setae in rows of 8 and 5 horizontally, epimeron 3 bearing only weak posteroventral notch armed with setule, epimera 1-2 with similar setule well above ventral margin; posteroventral corners of epimera 1-3 rounded.

Urosomite 1 with 2 weak dorsal humps and small posteroventral protrusion; urosomites 2-3 each with unelevated posterodorsal edge; urosomite 3 barely elevated. Peduncle of uropod 1 with basofacial row of setae and spinule, dorsolateral margin naked except for apical spine, medial margin with 3 small spines, ventromedial face with several setae mostly in pairs; peduncle of uropod 2 with 1 apical dorsal spine, 1 similar apicomedial spine; rami of uropods 1-2 all with 4 apical spines, outer rami with 3 and 2 spines on dorsal margins, inner with double rows of 2-3 and 1-2 (lateral cited first) on uropods 1-2. Peduncle of uropod 3 short, with apical ring of 5 dorsal spines and basomedial dorsal group of 4 spinules and setule; ramus longer than peduncle, with complex of spines making ramus appear thorny, spines in 5 groups, 2 semicircles of 5 and 6 and apical group of

6 spines, medial margin with 2 groups of one spine each in tandem. Telson very short, broader than long, apex rounded, subtruncate, each dorsolateral face with 2 pairs of penicillate setules.

Cuticle very minutely punctate, occasionally with bare shallow pit bearing bulbar setule, punctations occasionally arranged into fingerprint striation pattern familiarly found in amphipods, this pattern especially prominent on backside of fleshy telson and lower posterior faces of epimera; bulbar setule pits especially prominent on dorsal surface of all segments, head, rostrum and article 1 of antenna 1.

FEMALE 'n': Generally like male but gnathopods distinct and brood plates present. Primary flagellum of antenna 1 with 9 articles; flagellum of antenna 2 with 7 articles. Gnathopod 1 like that of male but hand more slender and more rectangular, palm relatively shorter than in male and lacking spine fields near apex of dactyl; hand of gnathopod 2 similar to gnathopod 1 in stated attributes, wrist (carpus) relatively much longer than in male and longer than hand.

Brood plates and gills illustrated for this female; gills divided into 2 parts; brood plates (oostegites) generally slender, that of coxa 5 stoutest; note that setae of brood plates are rudimentary in this female but a fully setose brood plate for female 't' is illustrated as an example of the sexually active stage.

Appendages generally more sparsely armed than in male but this feature typical of smaller individuals of both sexes; for example, epimeron 1 with 8 facial setae, epimeron 2 with 6 (in different pattern); peduncle of uropod 1 with 2 basolateral spines, 2 ventral setal groups; non-terminal spine counts on rami of uropods 1, outer ramus 2, inner, 2 lateral, 2 medial; uropod 2, outer ramus 2, inner, 0 lateral, 1 medial. Uropod 3 (Fig. 4nR3), ramus with spine groups of 3-3-4.

MISCELLANEOUS SPECIMENS: Largest and best developed specimen is male 'q', in which flagella of antenna 1 are 12-articulate; of antenna 2, 9-articulate; and the accessory flagellum, in contrast to smaller individuals, is completely articulate. Setae on coxae 1-4 number 40-16-11-2, respectively; on epimera 1-2, 12 and 9. Basolateral armament on peduncle of uropod 1 consists of 1 seta-2 setae-1 spine. Dorsal uropodal spines on uropod 1 outer and inner rami are 4 and 2-2; on uropod 2, 2 and 1-2; on uropod 3 ramus 5-7-5 with detached medial pair in tandem of 1-1.

Male 'r', setae of epimera 1-2 are 7-8; male 's', 6-8 (in groups of 4-4); male 'o', 8-7.

Male 'o' is unusual in the presence of a middorsal spine on peduncle of uropod 2; spines on uropod 1 outer and inner rami are 3 and 2-2; on uropod 2, 2 and 2-2; ramus of uropod 3, 4-5 and 1-1 medial tandem (opposite uropod 3 variant, 5-5 and 1-1).

Young female 'u', brood plates rudimentary, setae on epimera 1-2, 7 and 6; spines on uropod 1 outer and inner rami, 2 and 2; on uropod 2, 2 and 1; ramus of left uropod 3, 1-4-3, right, 0-4-3.

Notes on carcass of holotype, male, 9.0 mm. (No

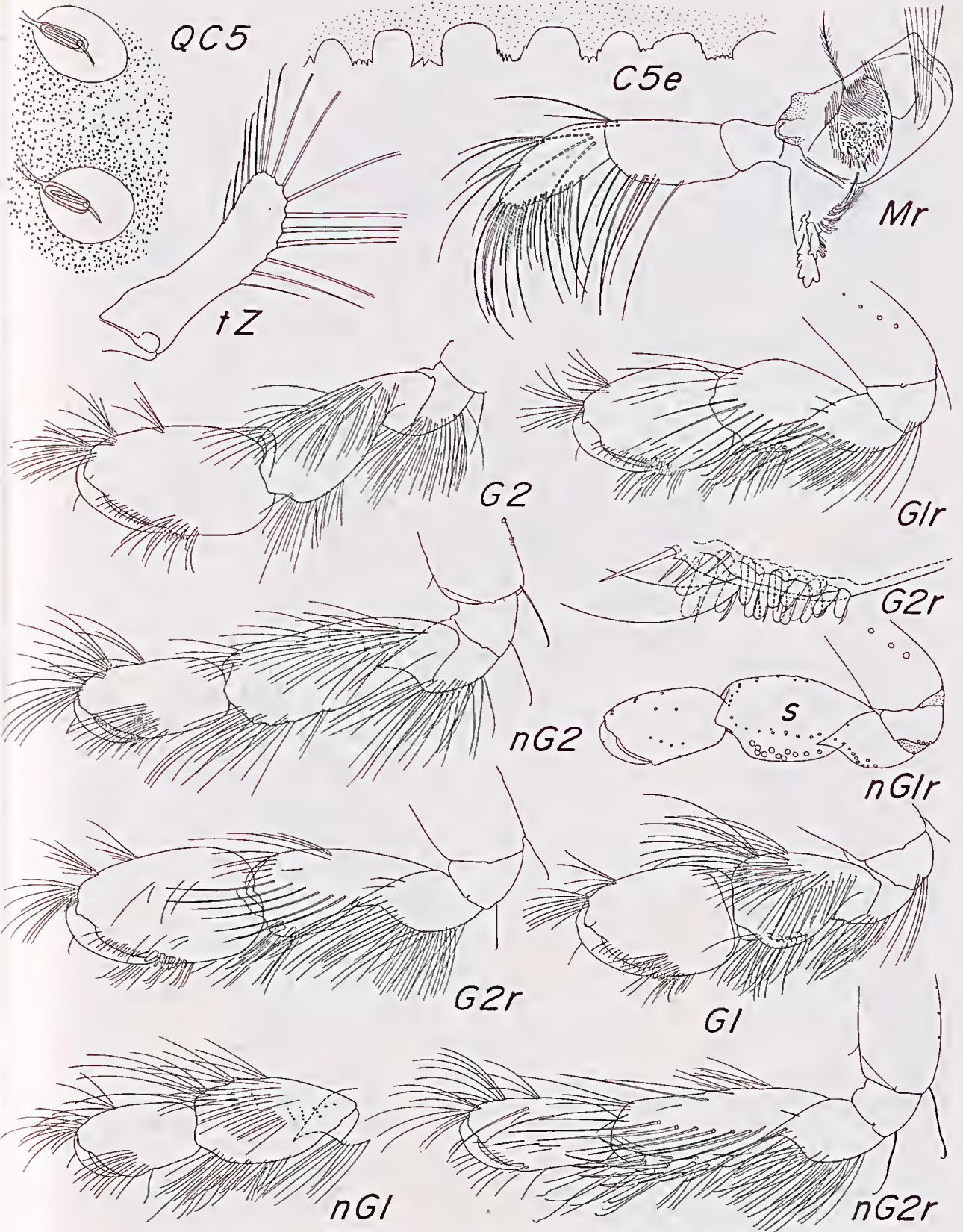


Fig. 2—*Notoediceros tasmaniensis*, unattributed figures, male 'p'; n, female 'n'; t, female 't'.

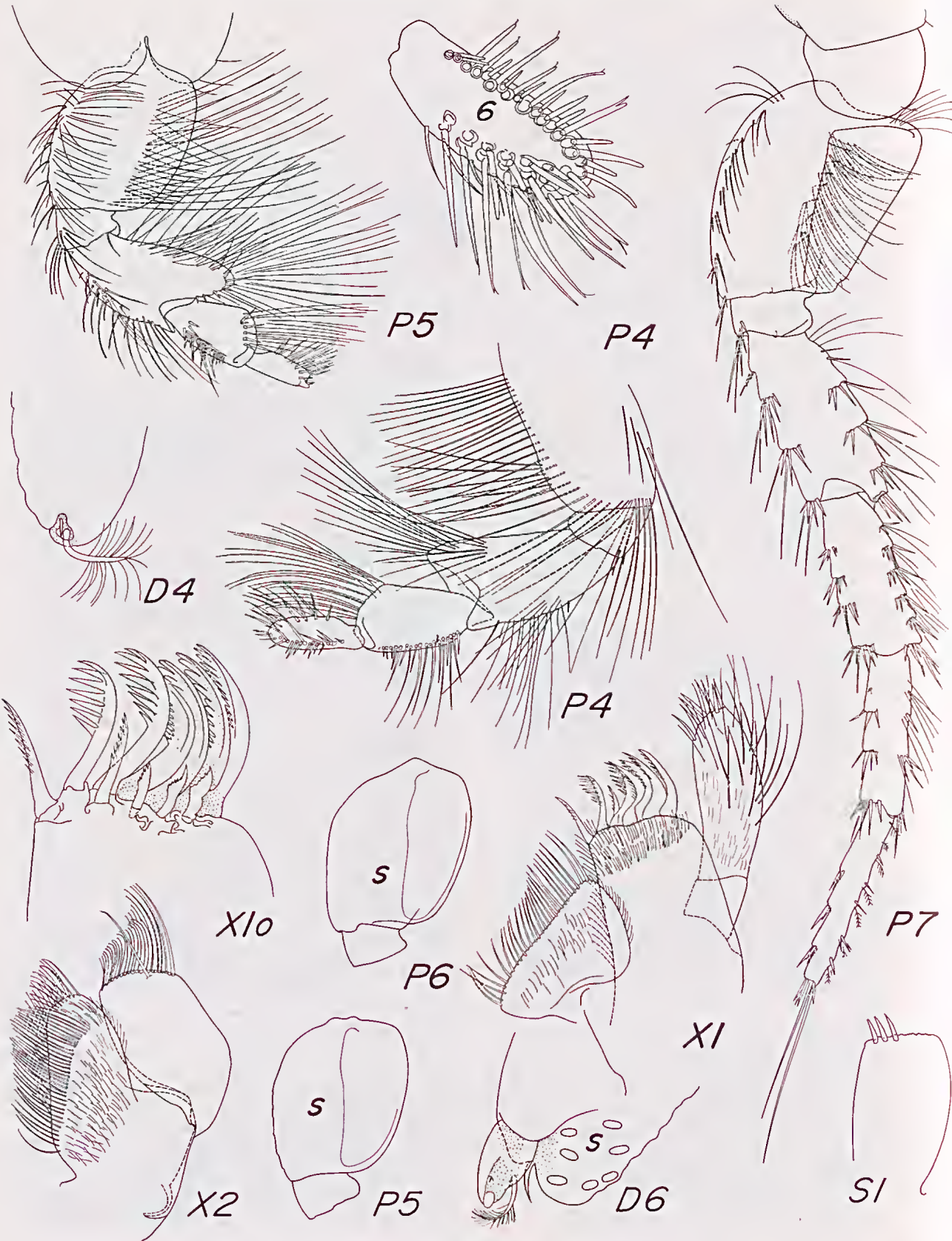


Fig. 3—*Notoediceros tasmaniensis*, all figures, male 'p'.

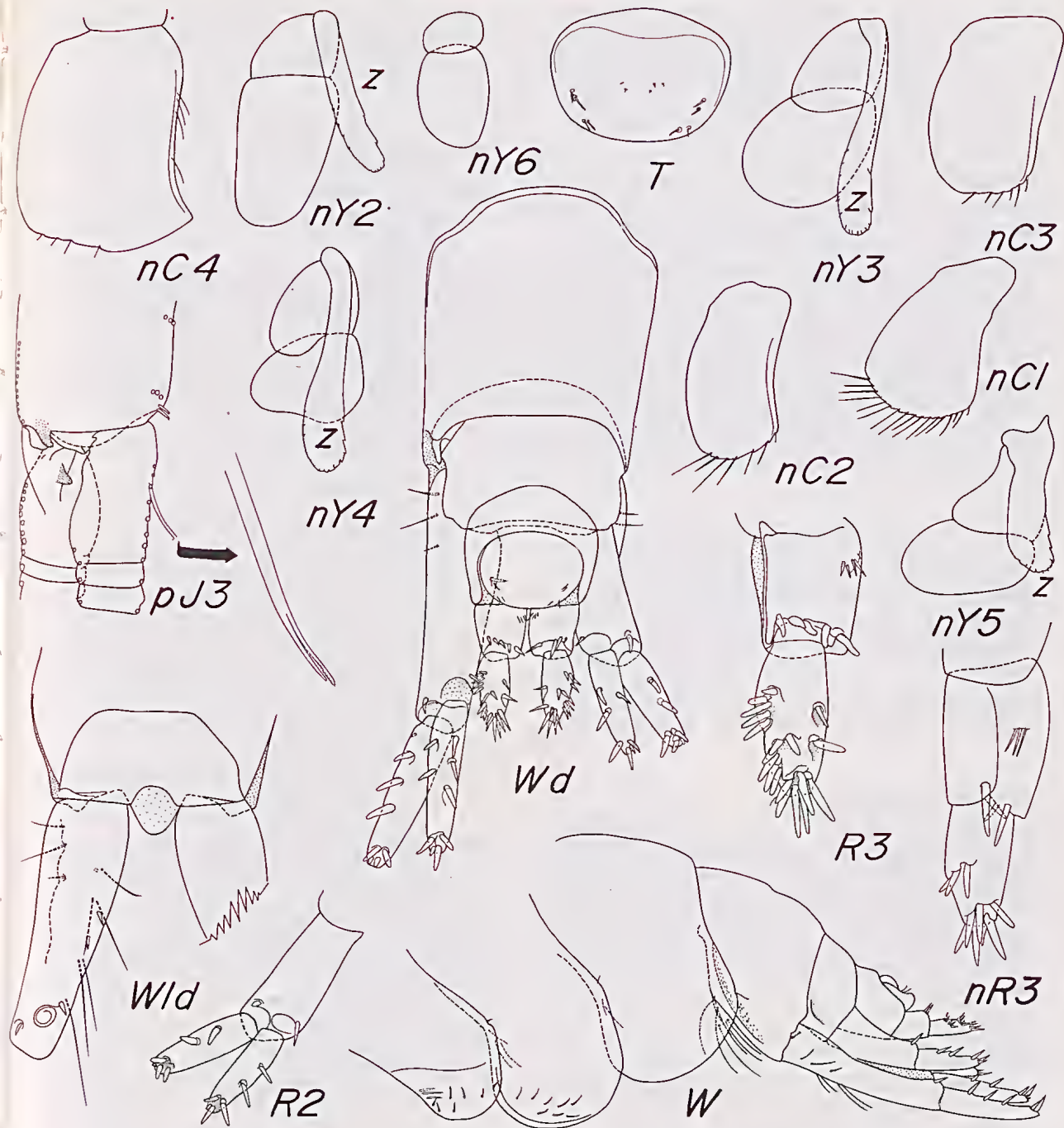


Fig. 4—*Notoediceros tasmaniensis*, unattributed figures, male 'p'; n, female 'n'.

slides.) Uropod 3 uniramous (like Fig. 4R3). Telson much more ovate transversely than shown by Bousfield (Fig. 4T).

VARIABILITY: Largely in setal densities, especially in presence of both lateral and medial dorsal spines on the inner rami of uropods 1-2 in larger specimens.

HOLOTYPE: Male, 9.0 mm, in collection of Museum of Victoria.

TYPE LOCALITY: Tasmania, west coast, Open Beach, in freshwater stream outflow, near high-water level, 7 Nov. 1978, Coll. E. L. Bousfield and A. M. M. Richardson.

VOUCHER MATERIAL: Tasmania, north end of Bond Bay, Point Davey, in brackish pools, 10 April 1975, collected by D. Coleman and J. Fenton: male 'p' 7.28 mm, female 'n' 5.50 mm (illustrated), male 'o' 6.01 mm, male 'q' 7.29 mm (noted as largest specimen), male 'r' 6.60 mm, male 's' 5.93 mm, female 't' 5.66 mm (oostegite illustrated), young female 'u' 4.22 mm.

REMARKS: In describing this genus, Bousfield (1983) noted an 'unequally biramous' uropod 3, but our examination of the holotype and paratypes demonstrates the uniramous condition (Figure 4R3). We have not dissected the carcass of the holotype (no slides have, as yet, been lodged) but find it conforms to our description in other characters. Bousfield's diagnosis of the genus stated 'weakly (or not) calceolate antennae (male only)'. The holotype of the type-species lacks calceoli, which Bousfield in a sentence below uses as one of three main characters distinguishing this genus from others in its subgroup. Our key develops other relationships.

DISTRIBUTION: Tasmania, marine brackish pools and streams of intertidal zone.

Exoediceroides Bousfield 1983

1983 (March) *Exoediceroides* Bousfield, p. 273.

1983 (June) *Warreyus* Barnard & Drummond, p. 65.

TYPE SPECIES (by original designation): *Exoediceroides maximus* Bousfield 1983. (= *Oediceros latrans* Haswell 1879).

OTHER SPECIES: *Exoediceros maculosus* Sheard 1936 (type species of *Warreyus* Barnard & Drummond 1983)

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